FIG. 1

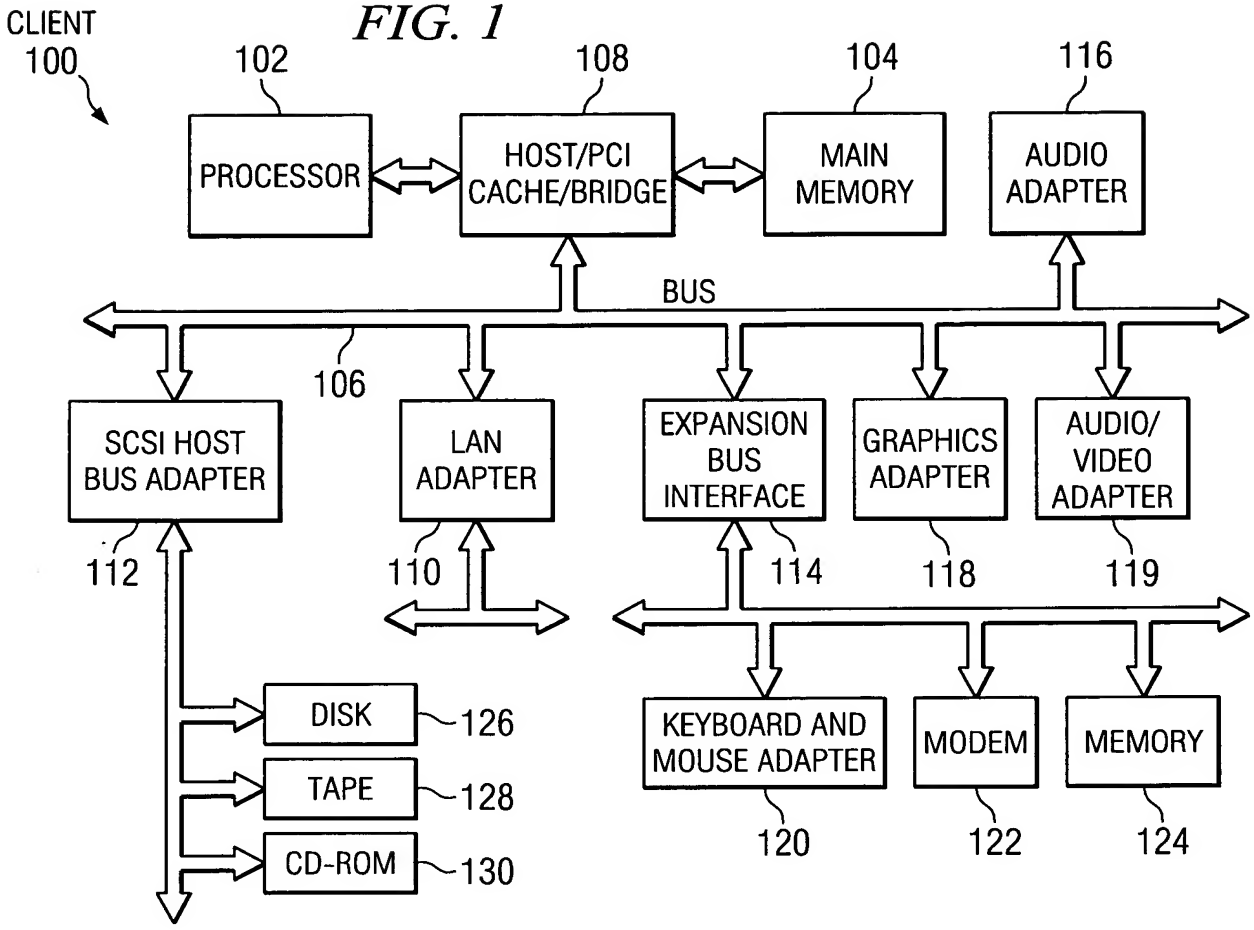


FIG. 3

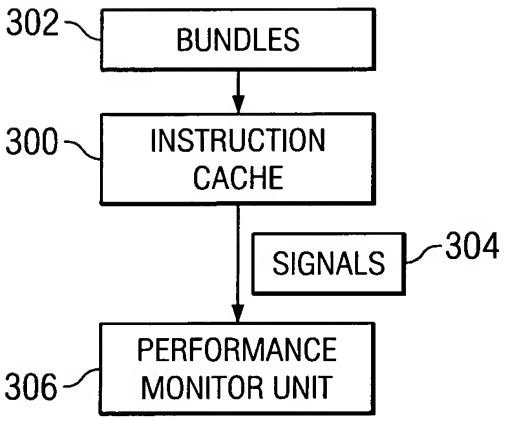
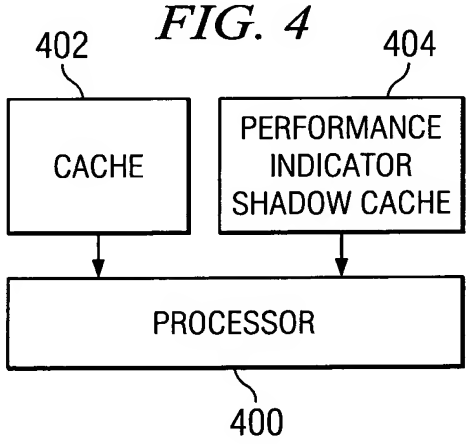


FIG. 4



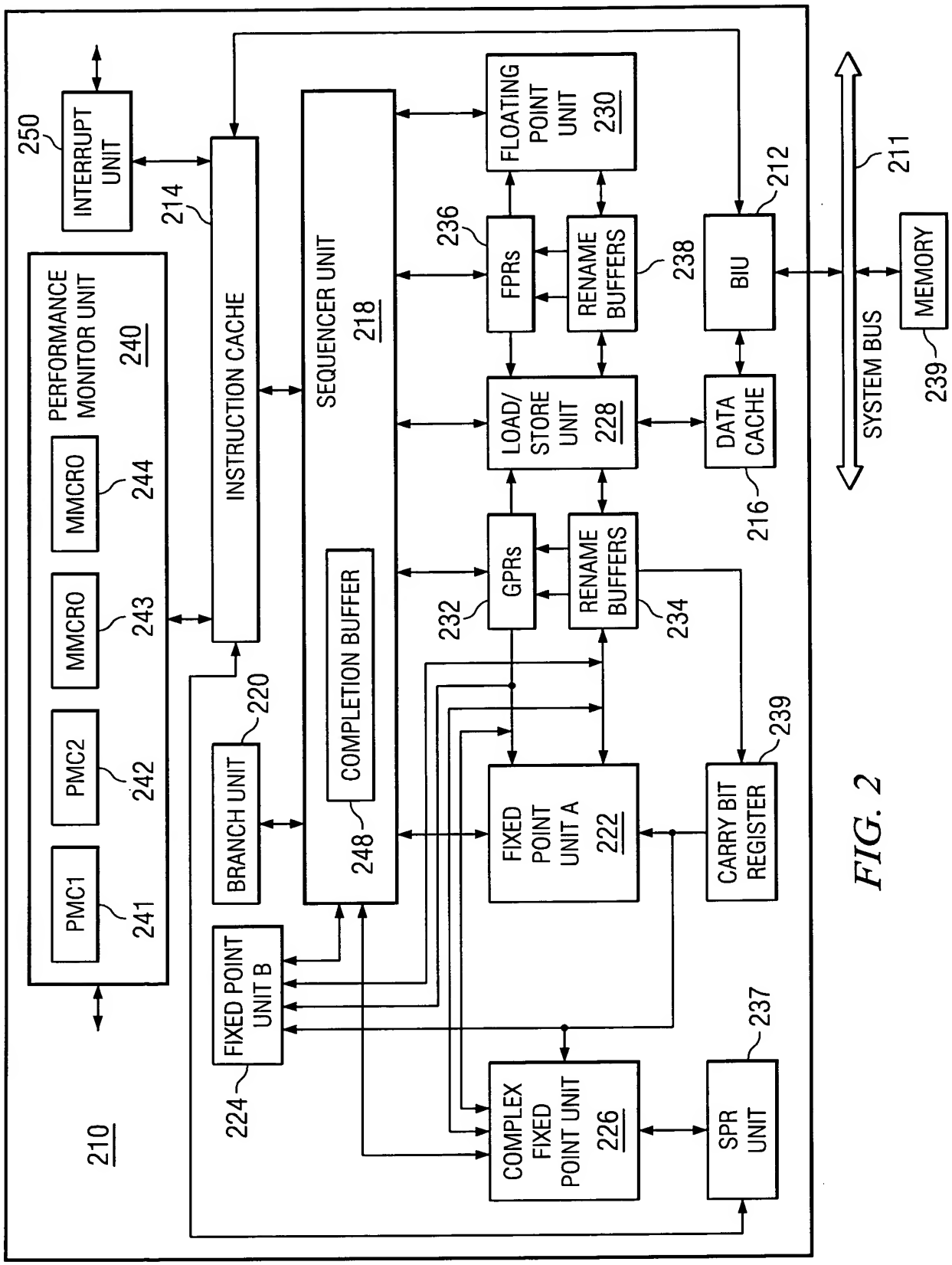

210
INTERRUPT UNIT
250
INSTRUCTION CACHE
214
SEQUENCER UNIT
218
FLOATING POINT UNIT
230
FPRs
236
RENAME BUFFERS
238
BIU
212
SYSTEM BUS
211
MEMORY
239
PERFORMANCE MONITOR UNIT
240
MMCR0
244
MMCR0
243
PMC2
242
PMC1
241
COMPLETION BUFFER
248
LOAD/ STORE UNIT
228
DATA CACHE
216
GPRs
232
RENAME BUFFERS
234
BRANCH UNIT
220
FIXED POINT UNIT A
222
CARRY BIT REGISTER
239
FIXED POINT UNIT B
224
COMPLEX FIXED POINT UNIT
226
SPR UNIT
237

FIG. 2

FIG. 5

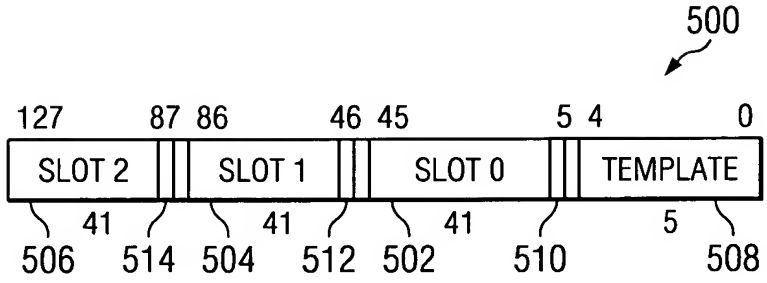


FIG. 6A

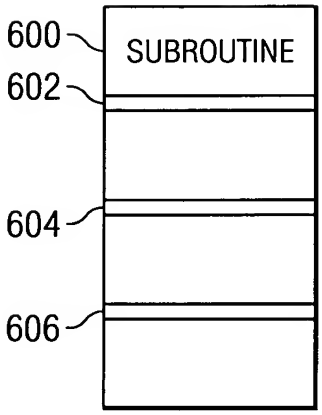


FIG. 6B

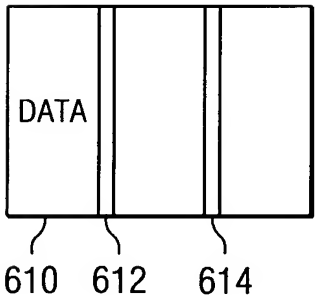


FIG. 7

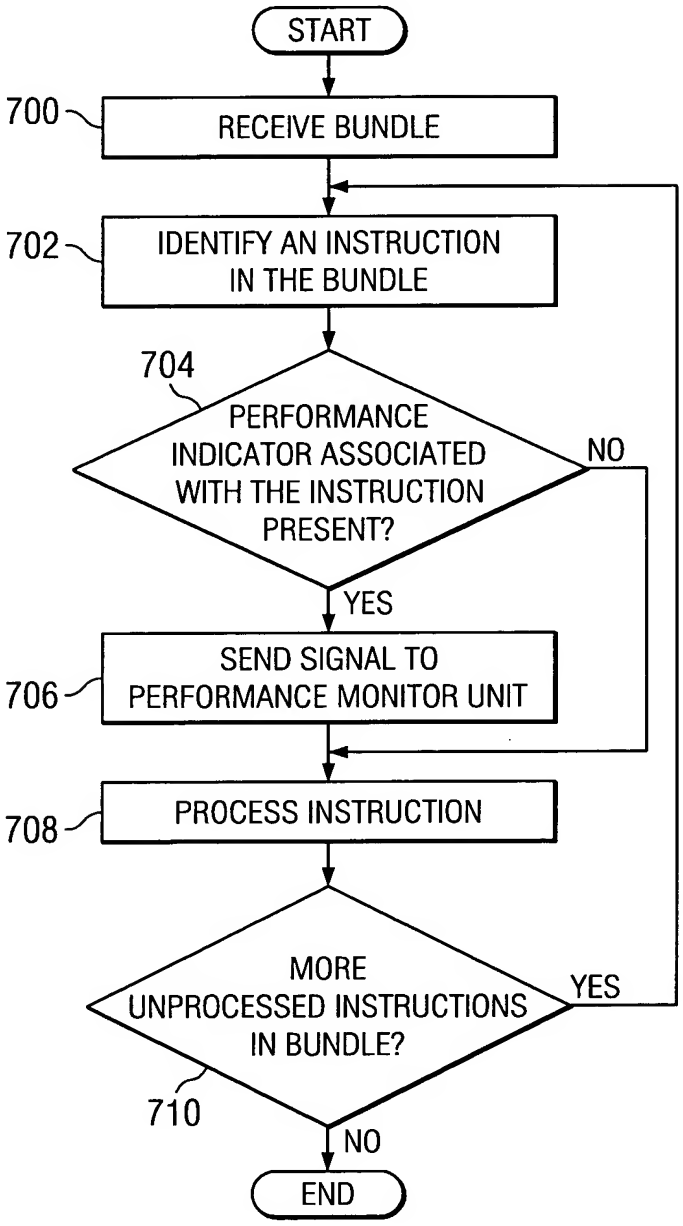


FIG. 8

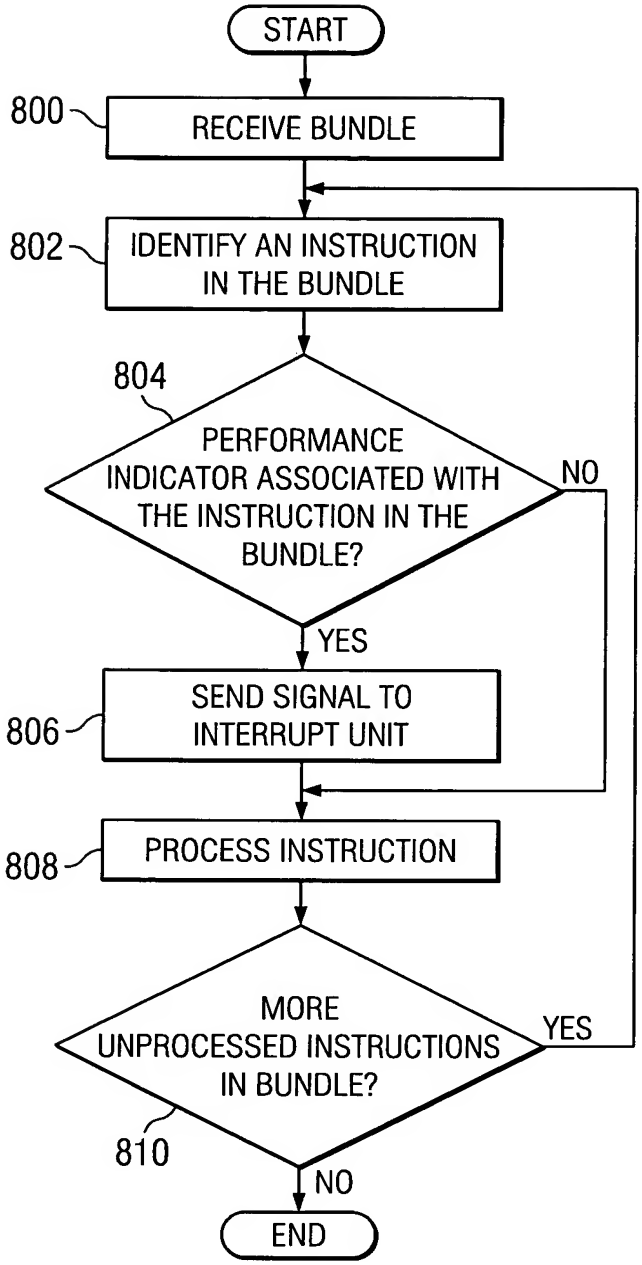


FIG. 9

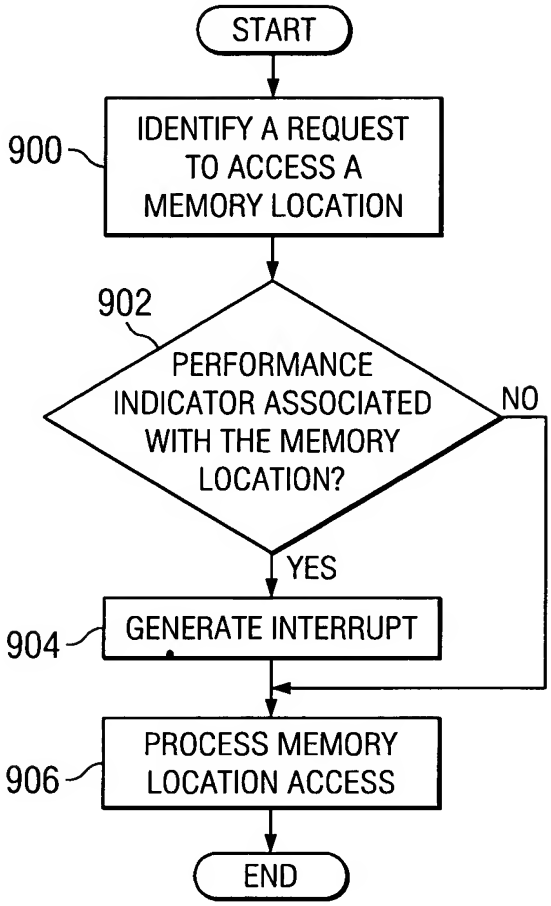


FIG. 10

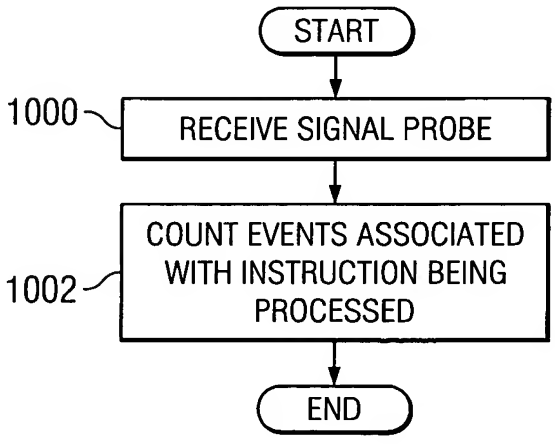


FIG. 11

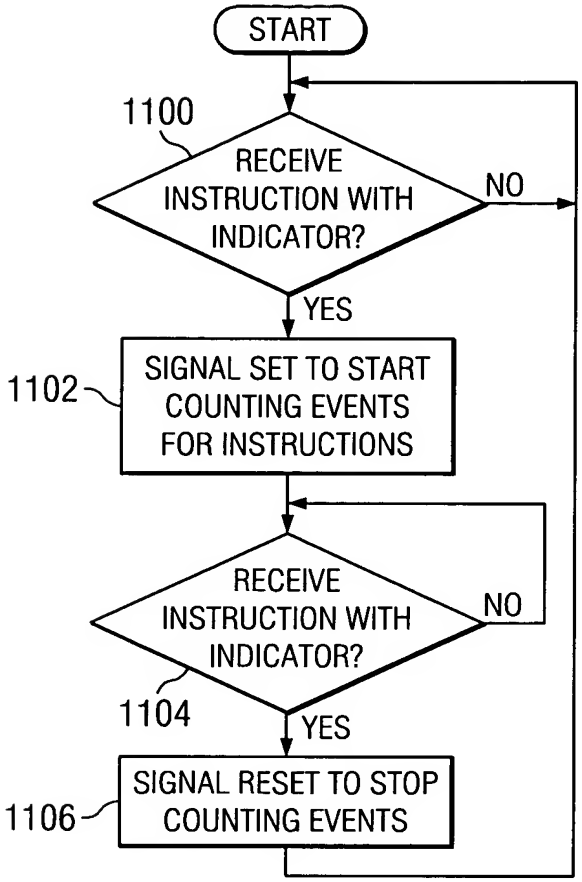


FIG. 13

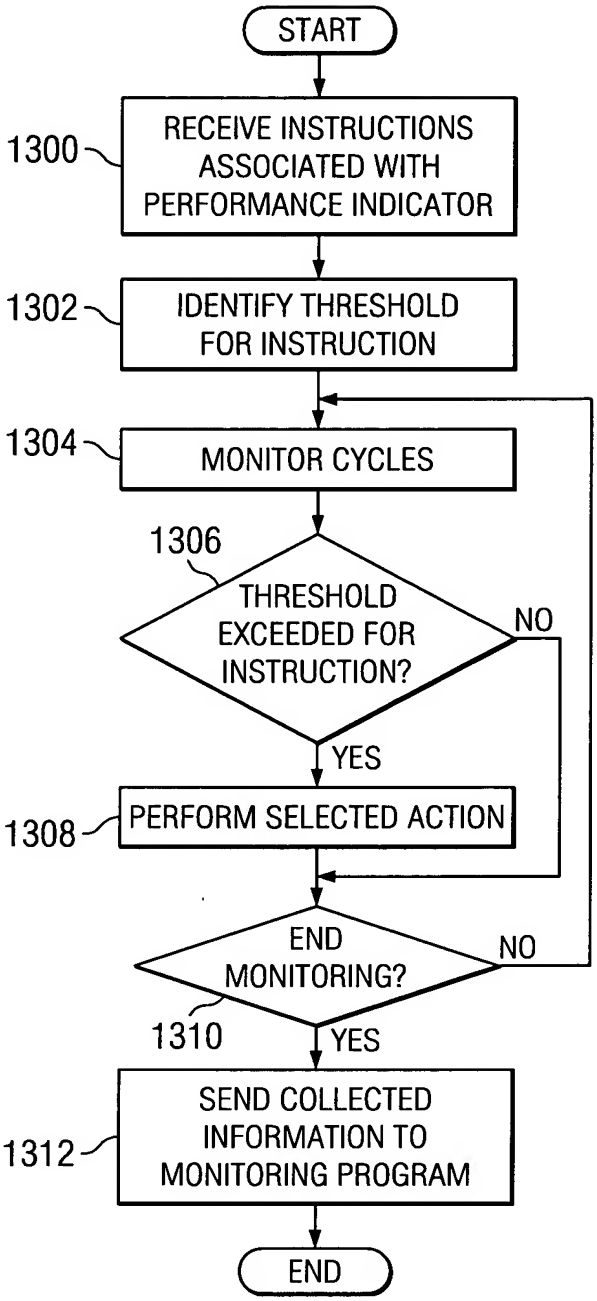


FIG. 12

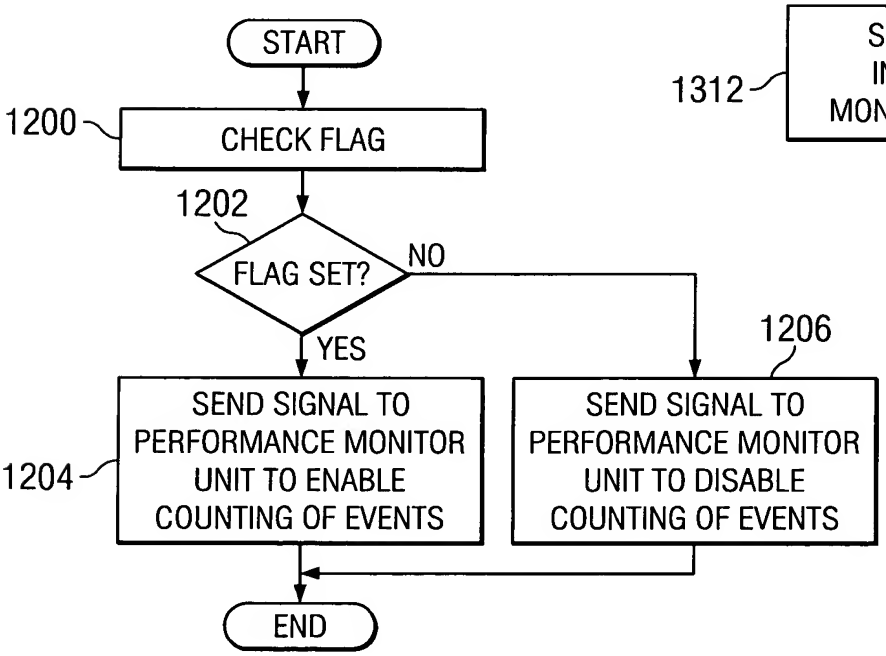


FIG. 14

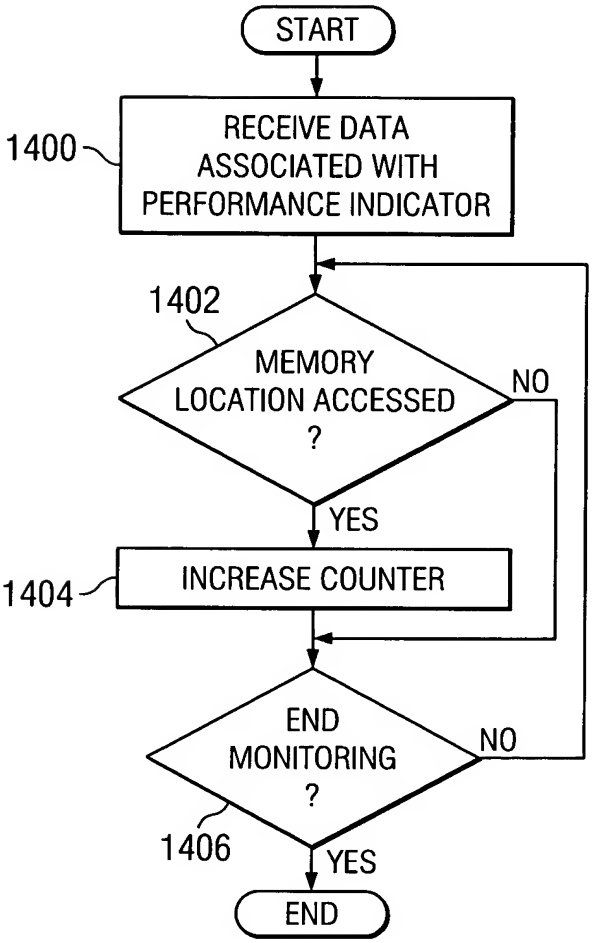


FIG. 18

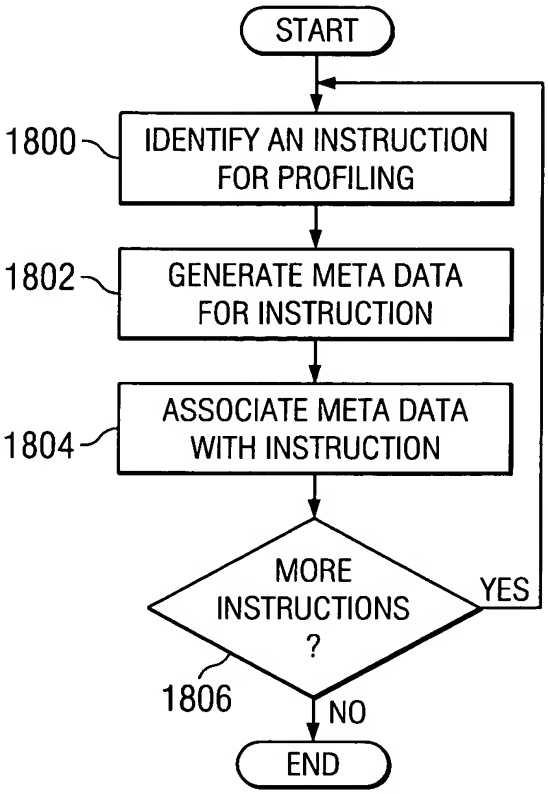


FIG. 15

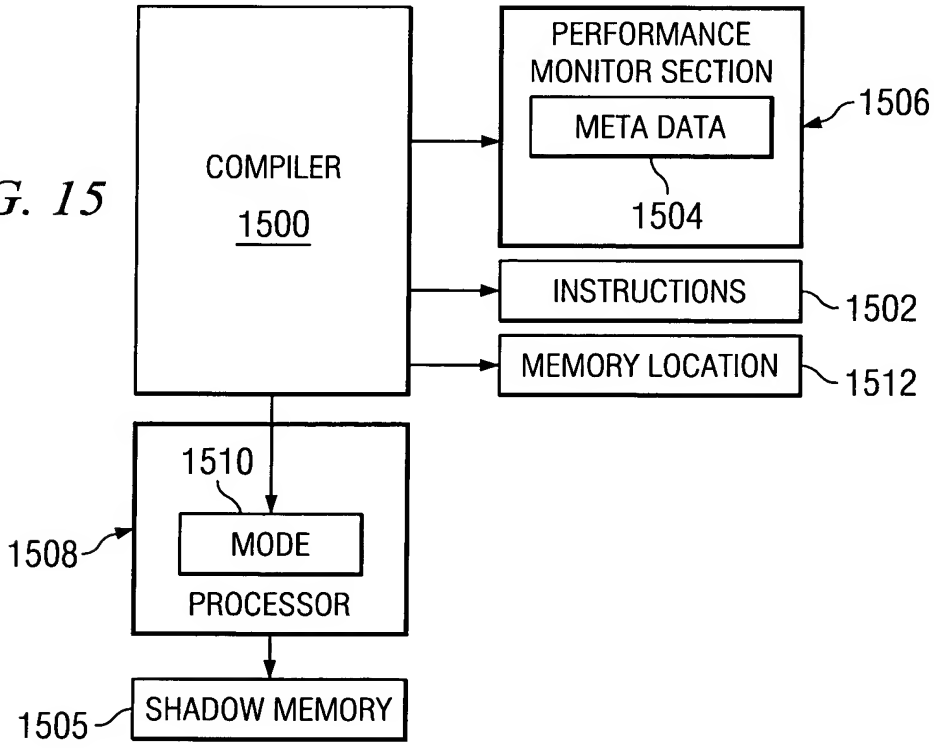


FIG. 16

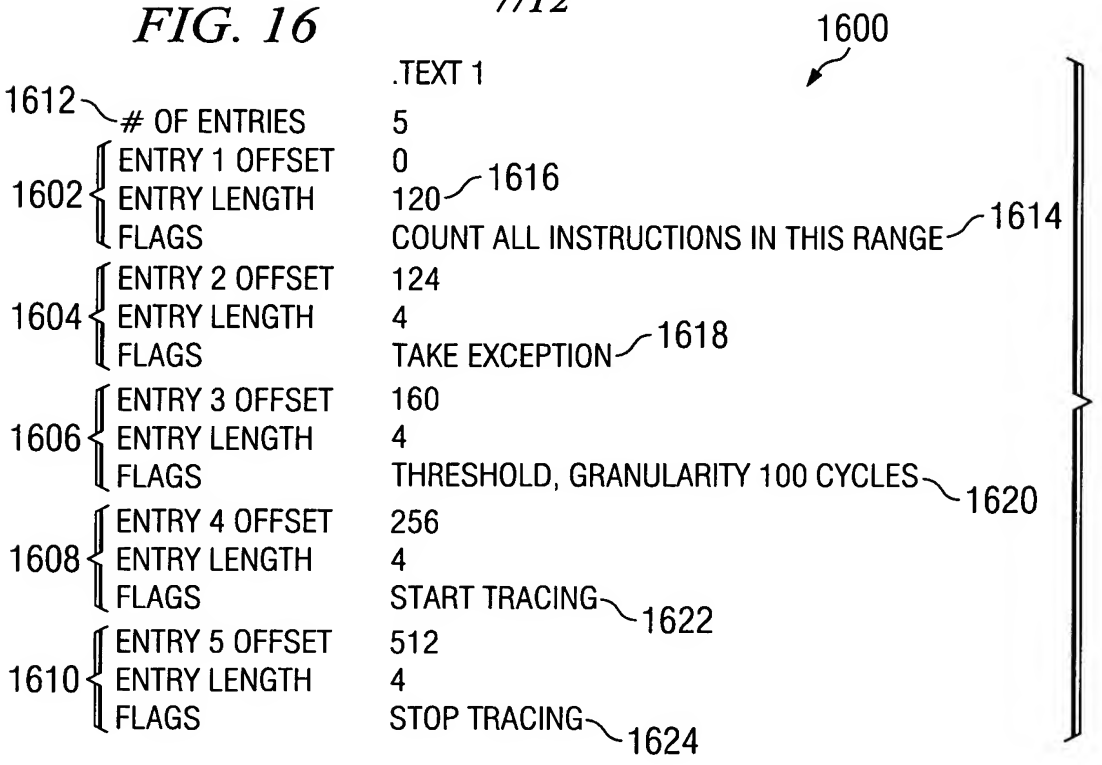

1600
.TEXT 1
1612
OF ENTRIES 5
1602
ENTRY 1 OFFSET 0
ENTRY LENGTH 120
1616
FLAGS COUNT ALL INSTRUCTIONS IN THIS RANGE
1614
1604
ENTRY 2 OFFSET 124
ENTRY LENGTH 4
FLAGS TAKE EXCEPTION
1618
1606
ENTRY 3 OFFSET 160
ENTRY LENGTH 4
FLAGS THRESHOLD, GRANULARITY 100 CYCLES
1620
1608
ENTRY 4 OFFSET 256
ENTRY LENGTH 4
FLAGS START TRACING
1622
1610
ENTRY 5 OFFSET 512
ENTRY LENGTH 4
FLAGS STOP TRACING
1624

FIG. 17

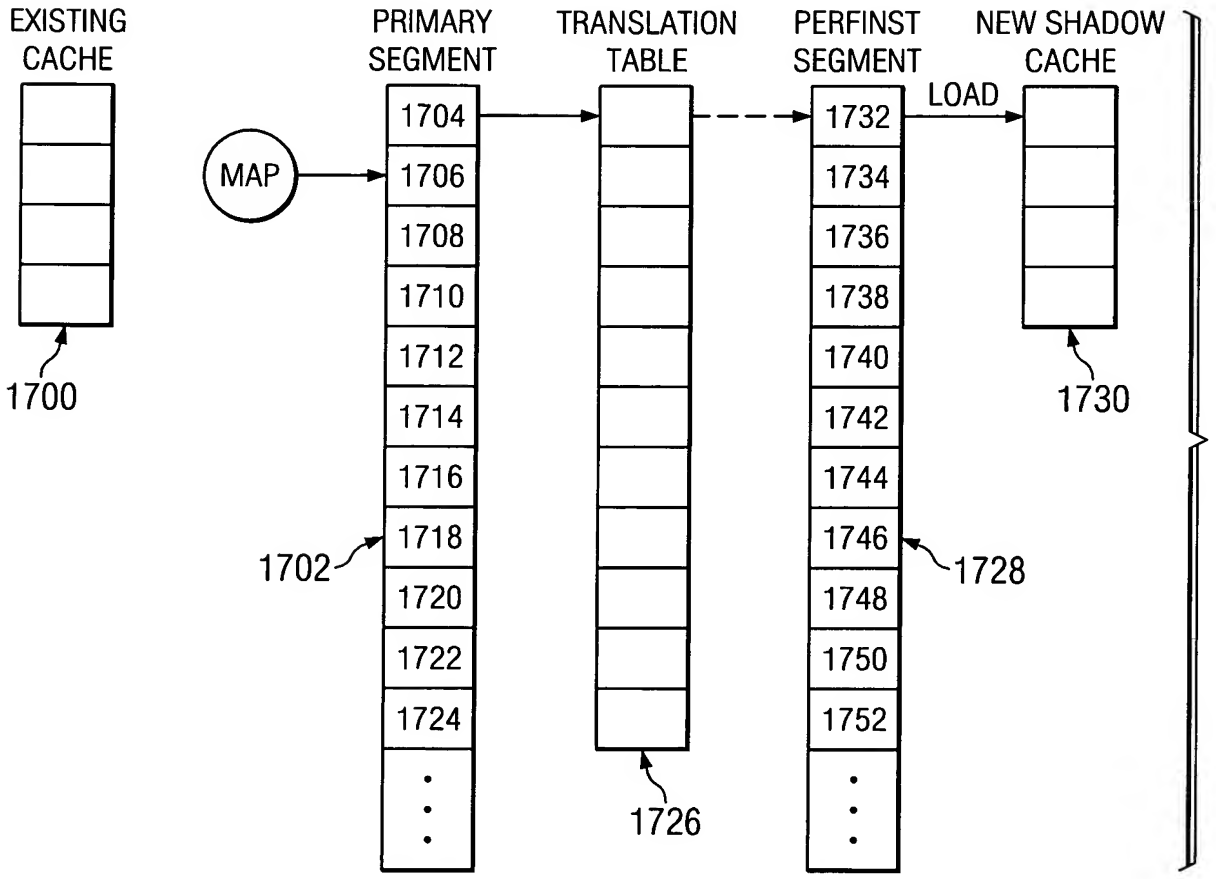

EXISTING CACHE
1700
MAP
PRIMARY SEGMENT
1704
1706
1708
1710
1712
1714
1716
1718
1720
1722
1724
1702
TRANSLATION TABLE
1726
PERFINST SEGMENT
1732
1734
1736
1738
1740
1742
1744
1746
1748
1750
1752
1728
LOAD
NEW SHADOW CACHE
1730

FIG. 19

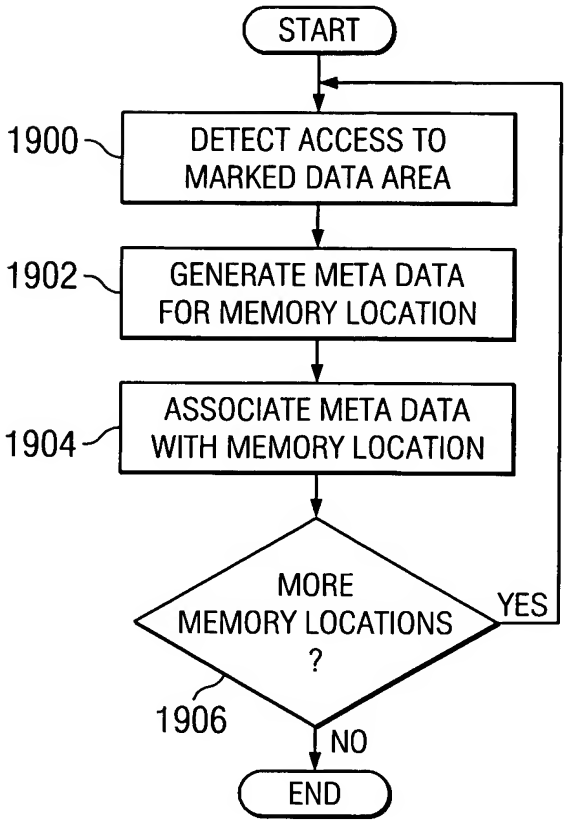


FIG. 20

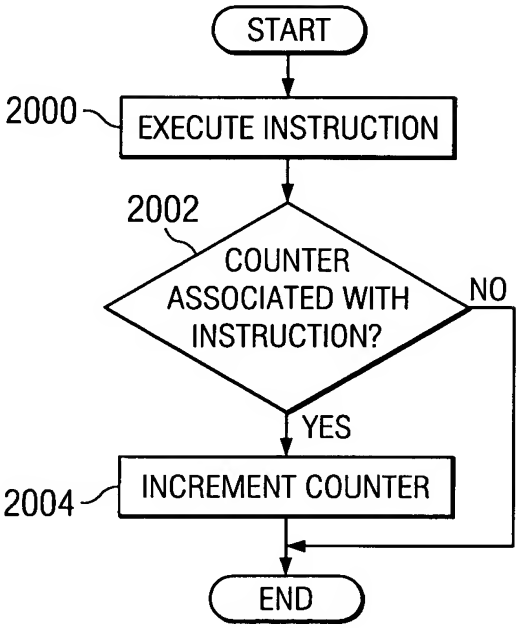
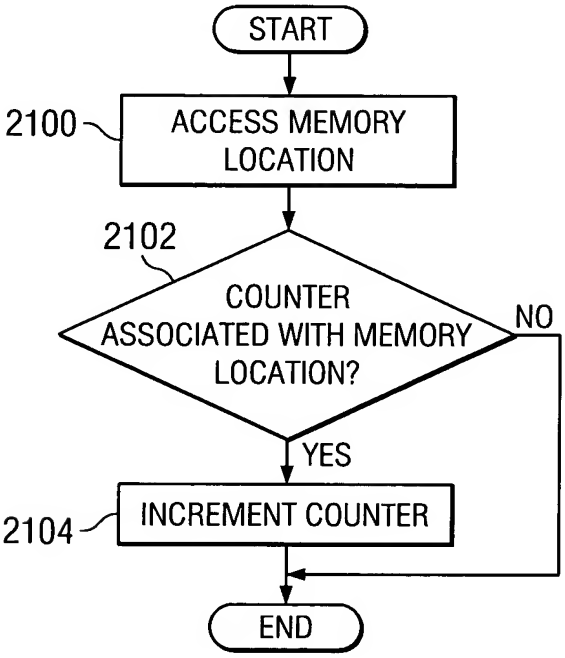


FIG. 21



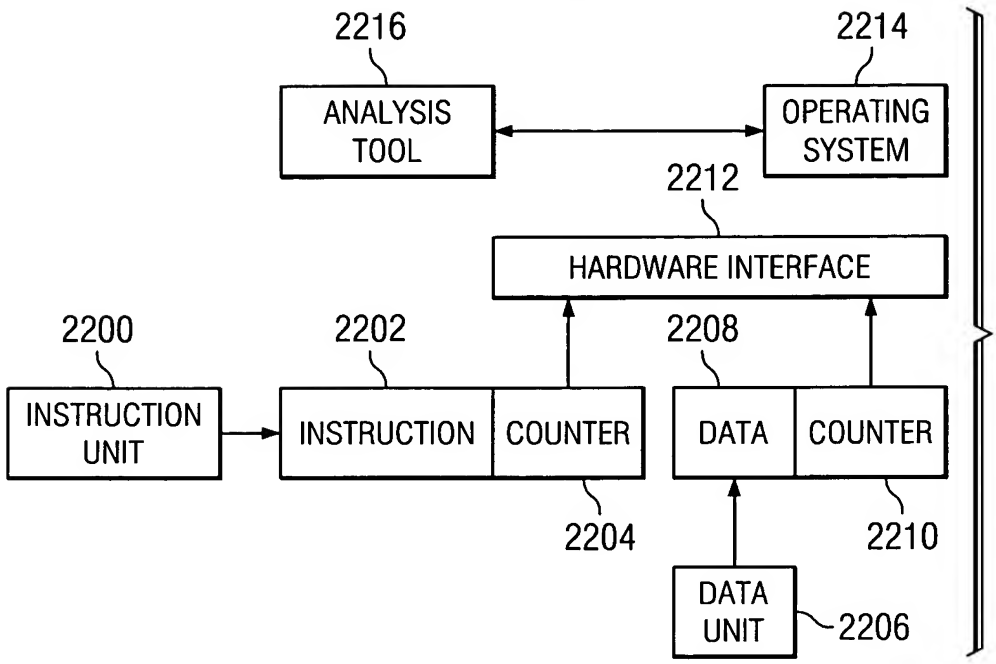


FIG. 22

FIG. 23

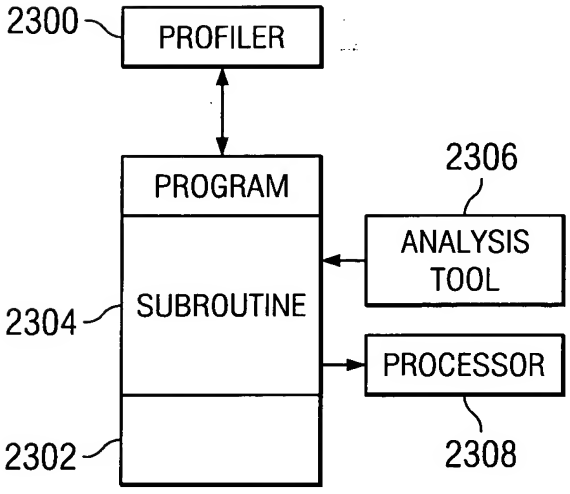


FIG. 24

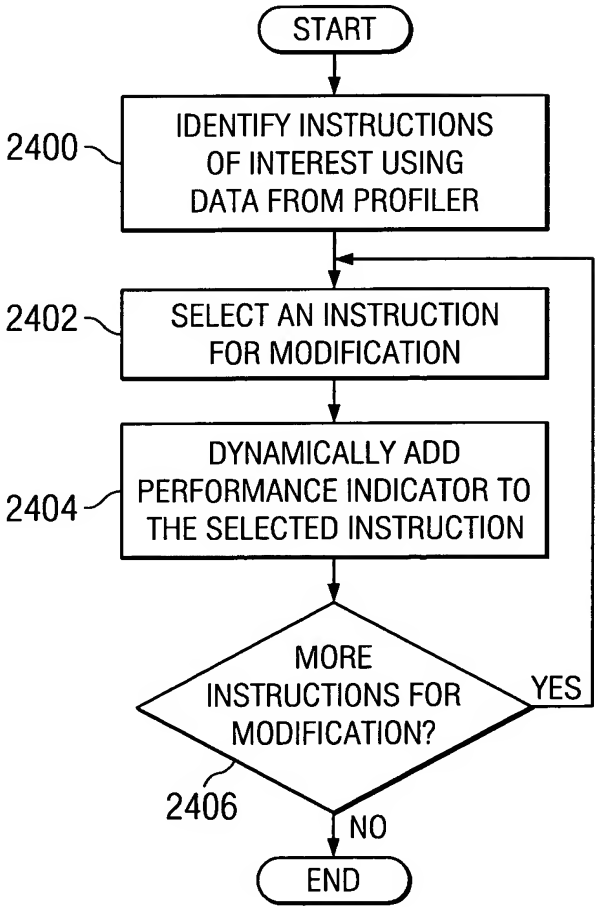


FIG. 25

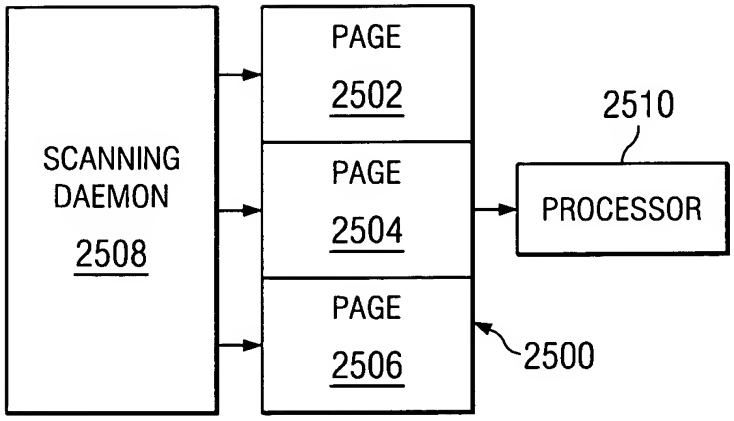


FIG. 26

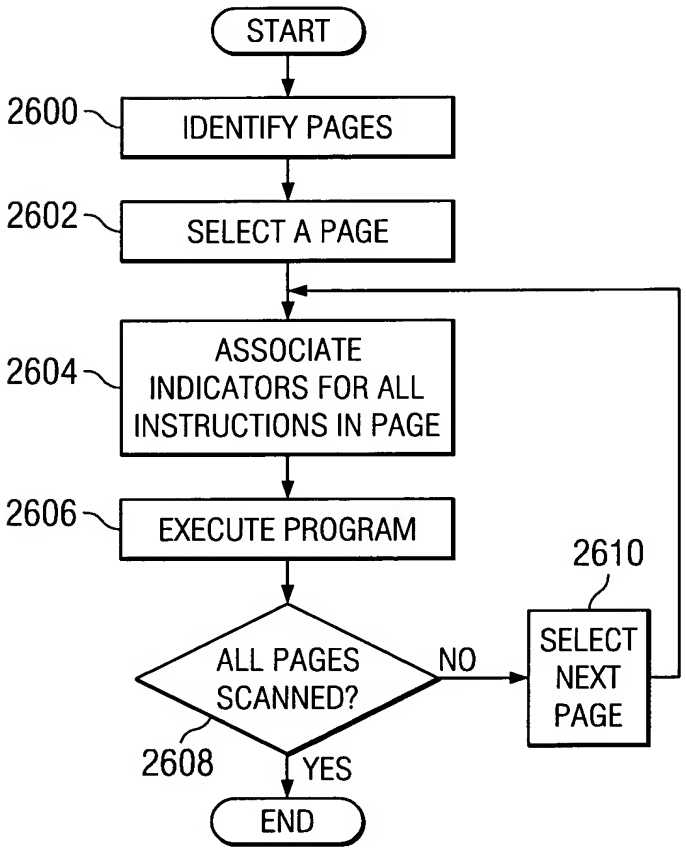


FIG. 27

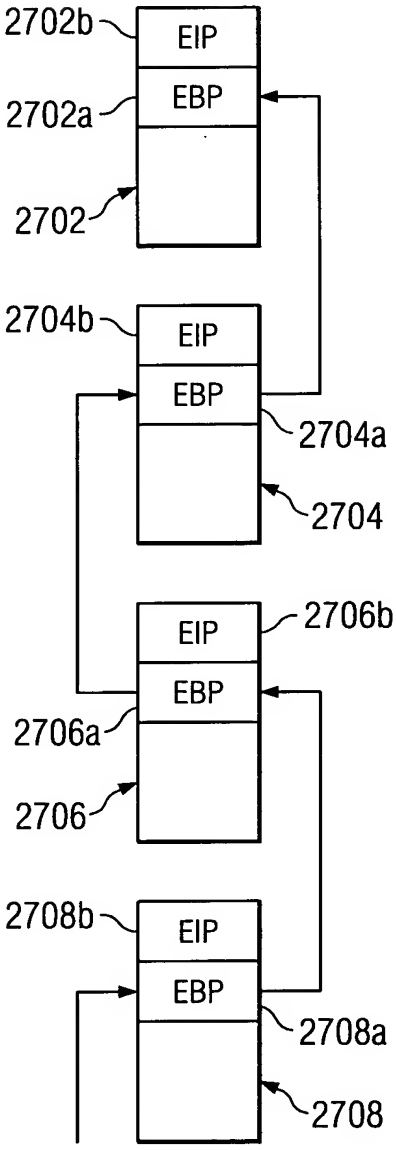


FIG. 28

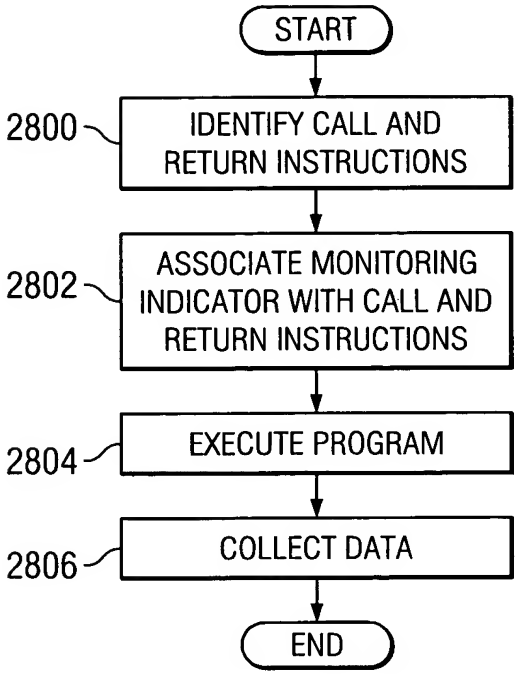


FIG. 29

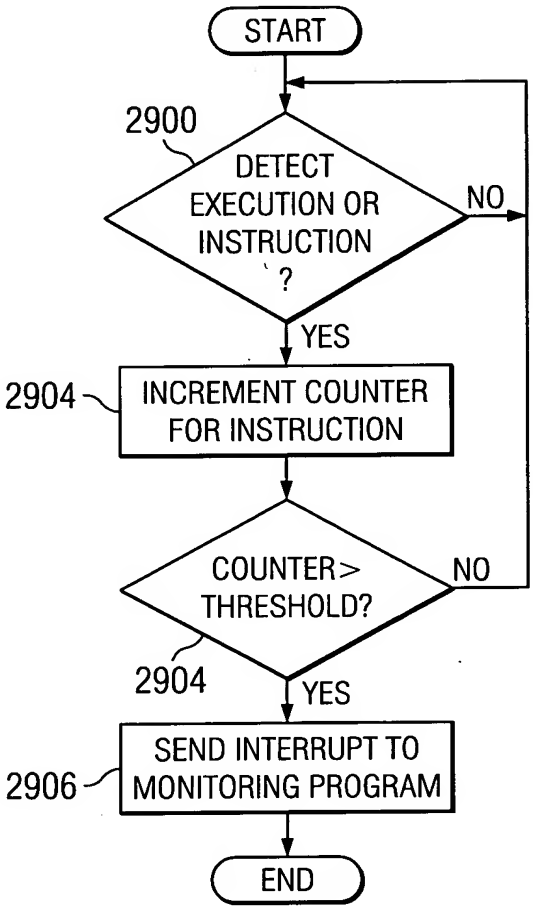
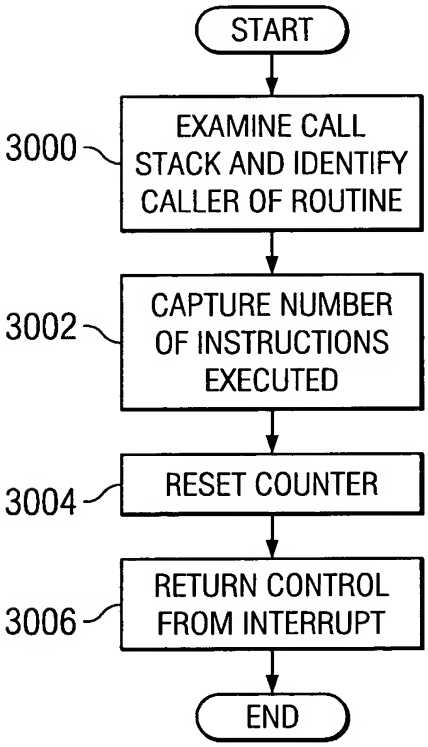


FIG. 30



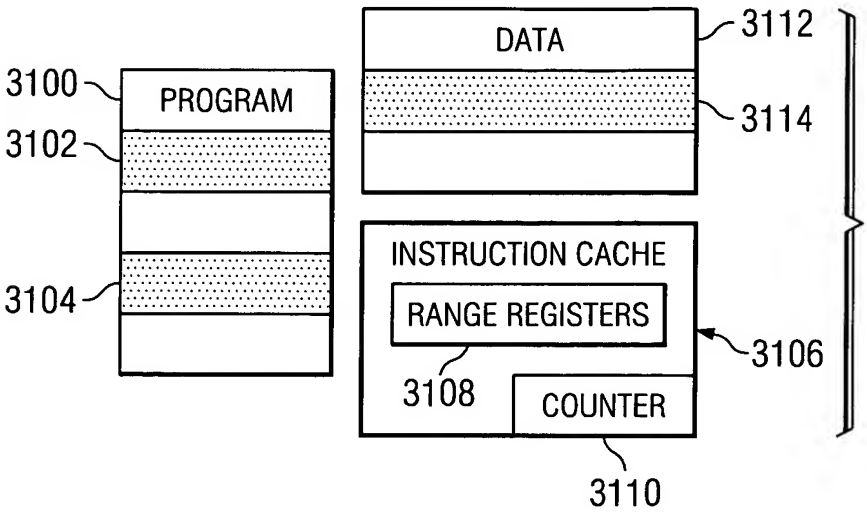
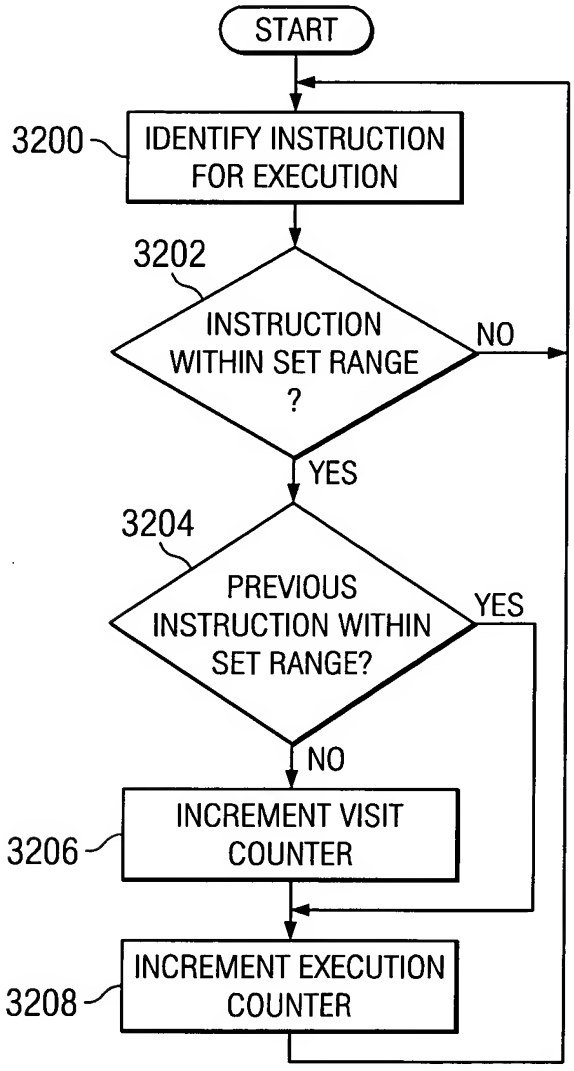

DATA
3112
3100
PROGRAM
3114
3102
INSTRUCTION CACHE
RANGE REGISTERS
3104
3106
3108
COUNTER
3110

FIG. 31

FIG. 32


START
3200
IDENTIFY INSTRUCTION FOR EXECUTION
3202
INSTRUCTION WITHIN SET RANGE ?
NO
YES
3204
PREVIOUS INSTRUCTION WITHIN SET RANGE?
YES
NO
3206
INCREMENT VISIT COUNTER
3208
INCREMENT EXECUTION COUNTER